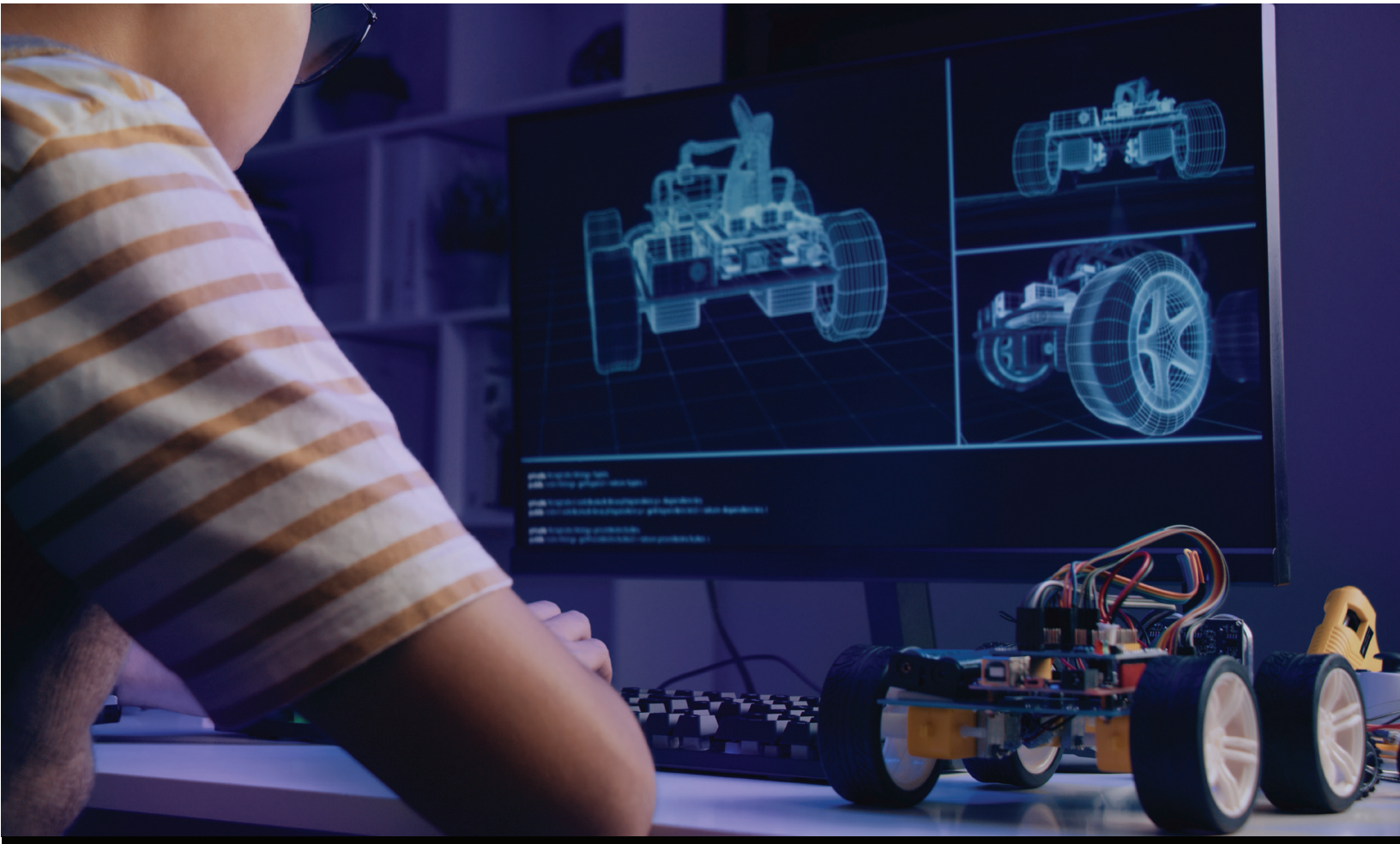
WHITE **PAPER**

Lenovo

Microsoft



How Lenovo Partnered with Dallas ISD Career and Technical Institutes to support STEM needs in an educational environment

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In their report, the National Council of Supervisors of Mathematics (NCSM) and the National Council of Teachers of Mathematics (NCTM) state that a well-designed and effective mathematics, science, technology and engineering (STEM) program provides many opportunities to use mathematical and scientific thinking, reasoning, and modeling across disciplines to tackle real problems involving any STEM fields.

STEM education emphasizes preparing future generations to be successful in their future endeavors. Career and technical education (CTE) programs in high schools and secondary-level academies strengthen STEM literacy and interest in STEM-related careers among all students. High-quality CTE programming provides a deeper understanding of STEM career pathways and builds STEM interest and skills by making content more relevant and tangible. In addition, these programs, including architecture, visual arts, cybersecurity, and software development, prepare students for career pathways in the global marketplace by offering experiential learning, post-secondary credits, and industry certifications.

Dallas ISD Career and Technical Education Institutes

The Dallas ISD Career and Technical Education Institutes serve 50,822 students in grades 6-12 over 83 campuses and offer 13 career pathways with 243 different CTE courses classified in 51 programs, including architecture, health sciences, and engineering. The vision of the Dallas ISD Career Institutes is to provide high school students a choice to pursue a Career and Technical Education (CTE) Pathway, work with industry partners, train on state-of-the-art, industry-standard equipment, obtain four or more certifications, and obtain dual credit when appropriate, before graduation.

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Their Why

Rhonda Howard
Coordinator, Career Clusters Support, Dallas ISD Career Institutes

Rhonda Howard, Coordinator of Information Technology and Computer Science for the Dallas ISD Career and Technical Education Department, understands that having reliable, robust, high-performing devices for a CTE program is essential. In addition, the hardware and software should be compatible with those used in the workplace, have sufficient technology to assist in achieving the program goals and course objectives, and have provisions for equipment and workspace that create the atmosphere of the industry for their CTE programs.

So, when Dallas ISD needed to begin refreshing CTE devices four years ago, Howard and her team assessed the programs' instructional and technology needs and identified issues and challenges. They were looking for long-term technology solutions that provided their programs with devices with the power and capacity they had been lacking in their current devices.

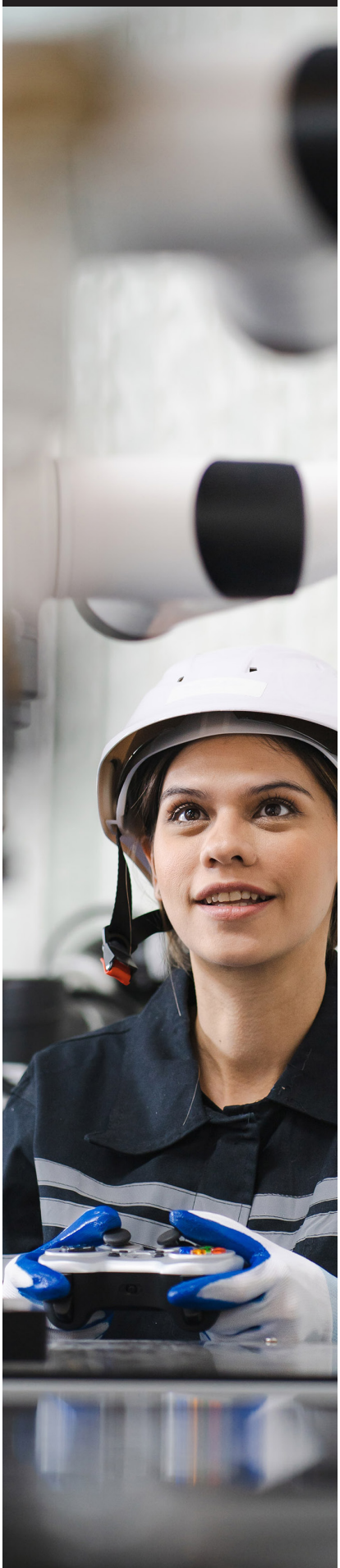
Instructional and Technology Needs

Software capability is critical to choosing the correct workstation for CTE programs. Howard and her team required workstations that could run software that provides students with skills and workforce experiences. For example, The Arts, A/V Technology and Communications (AAVTC) Career Cluster focuses on careers in designing, producing, exhibiting, performing, writing, and publishing multimedia content, requiring programs that need Adobe software such as Photoshop, Animate, and Illustrator. The Information Technology (IT) Career Cluster focused on building linkages in IT occupations for entry-level, technical, and professional careers related to the design, development, support, and management of hardware, software, multimedia, and systems integration services that need access to CAD. Whether the devices are laptops or workstations, Howard was looking for devices with robust Intel vPro processors, high-end graphic options, and a minimum of 16GB RAM.

Issues and Challenges

Initially, CTE classrooms and labs were outfitted with high-powered laptops. However, due to the complexity of the task required, the processors were taxed to keep up with the demand of the devices and needed to be faster to process basic instructions.

The team also identified the challenges with managing laptops that required a substantial portion of their time. For example, software updates were a constant challenge, and finding ways to add more memory to the devices took time. In addition, working with vendors whose customer service could have been more responsive to their needs was a constant battle.



Dallas ISD Partnership with Lenovo

After assessing their programs' needs and challenges and much research, Howard and her team sought a long-term partnership with Lenovo. This leading technology company would support the district's CTE programs and refresh and upgrade the institute's classroom and lab devices. This partnership was a game changer for the Dallas CTE institutes, as Lenovo and its team recognizes "that learning requires technology that creates a safe, accessible, collaborative experience to empower teachers and inspire students."

Laptop versus Workstation

CTE and STEM programs need the latest computer technologies for more innovative teaching and learning to prepare students for a future increasingly defined by digital technology and shared workspaces.

While the team recognized that laptops are highly portable and allow students and staff to use their computers anywhere, Lenovo ThinkStation P-series workstations made the most sense. With enhanced power, performance, and reliability, the Lenovo workstations support faster CPUs, more memory modules, and larger hard drives for instruction; they fit the requirements identified in the district's instructional and technology needs assessments.

Outfitting classrooms and labs with Lenovo ThinkStation P-series workstations was a shift to the institutes' cultures. Students and teachers liked the mobility with the laptops and extra space in their classrooms and labs. So, when making the laptop versus workstation decision, Howard and her team carefully considered how the CTE teachers designed and delivered their instruction and the needs of the programs.

How the right device can make all the difference

If students and teachers did not have suitable devices for their CTE programs, students would be frustrated by the constraints of the technology, and teachers would not be able to provide students with workforce-standard access to their learning. Howard and her team recognized that the Lenovo workstations could provide the highest power and performance to handle the demanding educational workloads necessary for their institutes.

Key features that solidified the shift to Lenovo workstations: processing speed, memory, professional services, and security.

Processing Speed

"When it comes to IT, architecture, engineering, and the arts programs, processing speed (CPU) is critical," says Howard. The faster the speed, the faster it can process data and projects. The Lenovo workstations, built on the Intel vPro® Platform, provide the highest power and performance to handle the most demanding education workloads within the CTE programs without compromising efficiency. The latest Intel® Core™ processors in the workstations handle real-world workloads and applications, while the NVIDIA® graphics allow students in engineering and architecture programs to render complex graphics quickly.

Memory

"We have students in architecture and visual design that need high-end video cards and a minimum of 512GB of random-access memory (RAM) installed on devices that run Adobe Photoshop," Howard stated. The Lenovo workstations solved this issue with its VR-ready NVIDIA® Quadro RTX™ 5000* graphics card, dual M.2 NVMe PCIe storage with RAID capability, 3 DisplayPort™ ports on board, up to eleven independent displays, up to 128GB, and 2933MHz memory. These specs ensure that all CTE programs are equipped with devices that have state-of-the-art storage and memory options.

Professional Services

Howard and her team manage many devices in the CTE programs and agree, "We can't afford to have one device go down significantly in a lab or classroom of 30 students." Lenovo's two professional services, the Lenovo Service Bridge and Lenovo Vantage, provided Dallas ISD with seamless and rapid support for their new Lenovo workstations. The Lenovo Service Bridge is an application that provides increased functionality between Dallas ISD's system and the Lenovo Support Site. The Lenovo Vantage optimizes computer performance and includes a series of diagnostic tools that check the health of the district's system and ensure that crucial software drivers are up to date. These tools provided that all Lenovo workstations were in optimal working conduction and up to date with software patches and updates, something that Rhonda and her team would have to do manually in the past.

Robust security

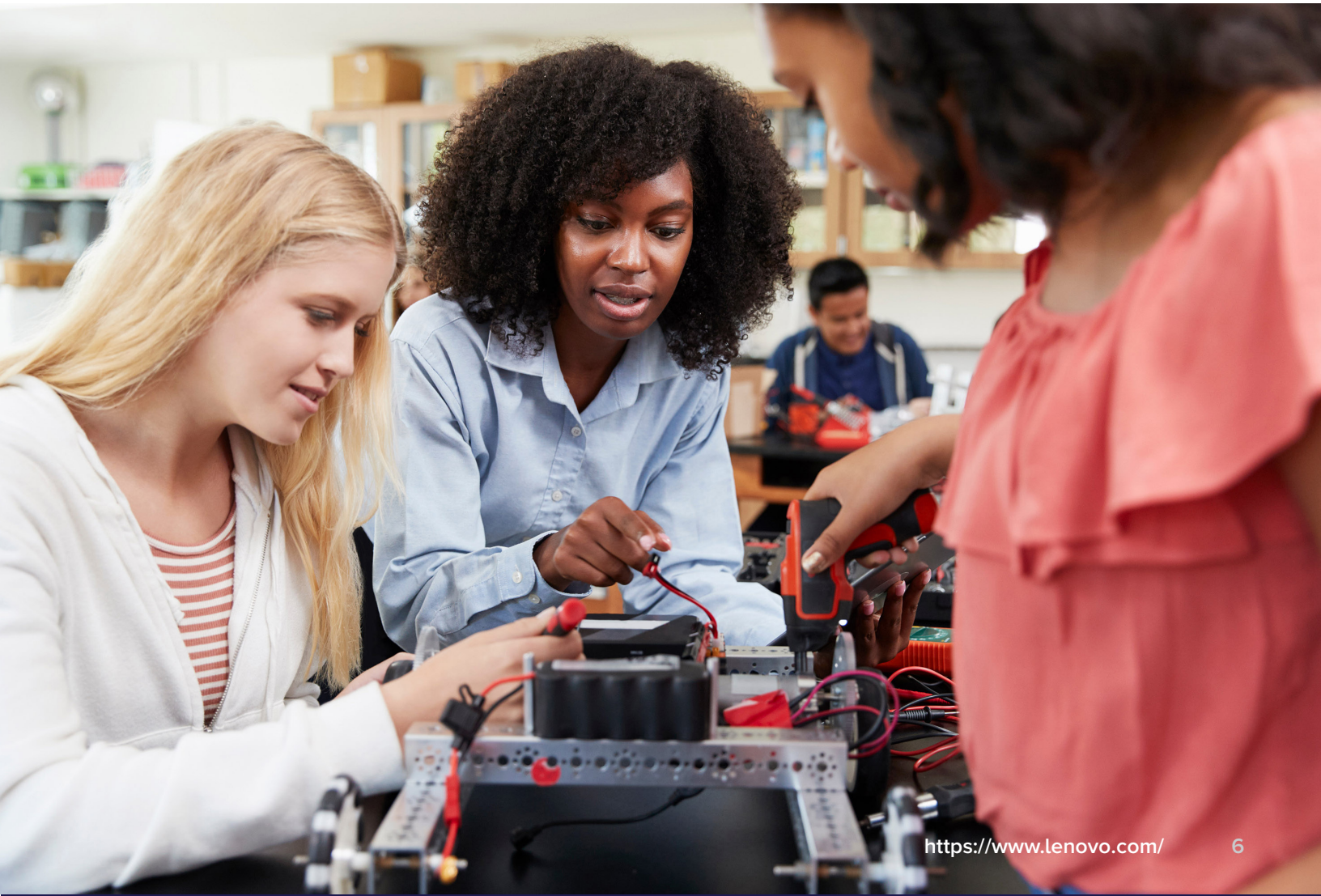
CCyber-attacks hit at least 45 U.S. school districts in 2022, almost double the number of K-12 schools in 2021. CTE and STEM programs' heavy reliance on technology to prepare students for careers after graduation leaves the district and students vulnerable to attacks. IT teams like Dallas ISD understand the need to protect student data, and the Lenovo workstations offered solutions that safeguarded learning experiences.

Equipped with powerful CIPA-compliant content filtering and sophisticated, AI-driven software from Lightspeed Systems, the workstations flag and block inappropriate material and combat cyberbullying. The Lenovo ThinkShield AI-powered security solutions built into all Lenovo education devices protect against malware, phishing, and network attacks. In addition, Lenovo Windows 10 devices have built-in, always up-to-date safeguards that protect student and teacher devices and information.

What's Next for Dallas ISD CTE Institutes

Howard's long-term goal is to "not enter a high school campus where you won't see Lenovo workstations in a CTE program." While her focus has been on the programs that needed more powerful computers, her team recognized that because of the reliability of the Lenovo workstations, CTE programs such as Finance and Education would benefit from the robust workstations.

Also, understanding the importance of STEM education in middle schools, Howard and her team are refreshing middle school labs and classrooms with Lenovo workstations. Lenovo is a strong partner with Dallas ISD's Career and Technical Education Department as they believe that "Lenovo workstations empower the most creative and innovative ideas students can imagine. With a greater emphasis on STEAM coursework from elementary school through higher education, the power of workstations is crucial for successful learning outcomes."



Lenovo is a $70 billion revenue global technology powerhouse, ranked #171 in the Fortune Global 500, employing 75,000 people around the world. Focused on a bold vision to deliver smarter technology for all, Lenovo has built on its success as the world's leading PC company by expanding into key growth areas including server, storage, mobile, solutions and services.

With over 20 years of education technology leadership and a team of experts focused on higher education, Lenovo offers flexible solutions which are ready to create a secure, dynamic environment for collaborative learning and a borderless campus. As a long-term partner, Lenovo can deliver complete and customized solutions with our devices, software and services designed to help build skills, empower career development, maximize each student's potential and prepare them for tomorrows workforce.
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